

$$\sum_{n=0}^{\infty} \frac{1}{(2n+1)^2} = \sum_{n=1}^{\infty} \frac{1}{n^2} - \sum_{n=1}^{\infty} \frac{1}{(2n)^2}$$

$$= \sum_{n=1}^{\infty} \frac{1}{n^2} - \frac{1}{4} \sum_{n=1}^{\infty} \frac{1}{n^2}$$

$$= \frac{\pi^2}{6} - \frac{1}{4} \frac{\pi^2}{6}$$

$$= \frac{\pi^2}{6} \left[1 - \frac{1}{4} \right]$$

$$= \frac{3\pi^2}{4 \times 6} = \frac{\pi^2}{8}$$